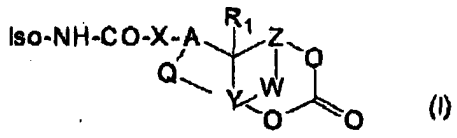
CLAIMS

1. Modified isocyanates of formula I below:



(I)

in which:

- Iso is a (poly)isocyanate residue (after having disregarded an isocyanate function);
- X represents an atom or a group of atoms resulting from the reaction of a compound bearing a -X'H group, where X' represents X or -OCOX, optionally after decarboxylation when X' represents OCOX with the isocyanate function;
- A represents a bond or a linear, branched or cyclic hydrocarbon-based chain containing from 1 to 30, advantageously from 1 to 18 and preferably 1 to 5 carbon atoms;
- R_1 represents H or a C_1-C_6 alkyl group ;
- Q is absent or represents an oxygen or sulfur atom or a hydrocarbon-based chain as defined for A;
- Z represents a bond or a hydrocarbon-based chain as defined for A;
- Y represents a bond or a hydrocarbon-based chain as defined for A;
- W is absent or represents an oxygen or sulfur atom or a hydrocarbon-based chain as defined for A; and
- Q being obviously absent when Y or A represents a bond and W or A being obviously absent when Y or Z represents a bond ;

with the proviso that Z and Y do not simultaneously represent a bond.

2. Modified isocyanates according to claim 1, in which -O,

-S,

=N,

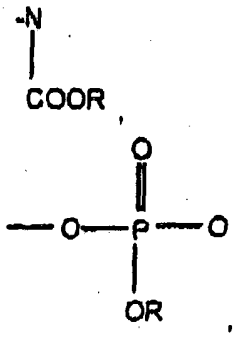
-NR, in which R represents a hydrogen atom or a hydrocarbon-based group generally containing from 1 to 12 and preferably from 1 to 5 carbon atoms, optionally interrupted with hetero atoms or hetero groups as defined above or optionally bearing substituents as defined above,

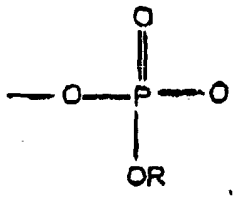
in which R' represents a 4- to 10-membered hydrocarbon-based chain as defined above which is optionally interrupted with one or more hetero atoms (in particular from columns IV A, V A and VI A of the Periodic Table of the Elements) such as O, S or Si or hetero groups selected in particular from -N= and -NR- (R being as defined above) and/or substituted with one or more substituents as defined above, the chain R' forming with NH a nitrogen ring, advantageously a polynitrogen and preferably a dinitrogen ring, such as a piperazino ring,

-CO-NR,

-NR-COO,

-COO,





- a hydrocarbon-based, preferably a linear or branched alkylene chain comprising from 1 to 12, preferably from 1 to 7 carbon atoms, optionally interrupted with hetero atoms or hetero groups as defined above or bearing substituents as defined above, or A'-COO-, where A' is a hydrocarbon based chain preferably a linear or branched alkylene chain as defined above, the -COO- group being linked to the -A- group as defined above,

-NH-CO-NH,

-NH-CO-NR,

R being as defined above.

3. Modified isocyanates according to claim 1, characterized in that X represents an oxygen atom.

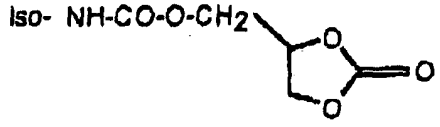
4. Modified polyisocyanates according to claim 1 or claim 2, characterized in that A represents a $-CH_2-$ group.

5. Modified isocyanates according to one of the preceding claims, characterized in that Y represents a $-CH_2-$ group.

6. Modified isocyanates according to any one of the preceding claims, in which Z represents a bond or $-CH_2-$, preferably a bond.

7. Modified isocyanates according to any one of the preceding claims, in which W and Q represent a bond.

8. Modified isocyanates according to any one of the preceding claims, of formula:



in which Iso is as defined in claim 1.

9. Modified isocyanates according to any one of the preceding claims, characterized in that they also comprise at least one other free isocyanate function and/or at least one other isocyanate function masked

with a masking agent or a mixture of thermolabile masking agents.

10. Modified isocyanates according to claim 9, characterized in that the masking agent is selected from imidazole, pyrazole, 1,2,3-triazole and 1,2,4-triazole, which may be substituted or unsubstituted.

11. Modified isocyanates according to either of claims 9 and 10, characterized in that they comprise at least two different masking agents selected such that, in the octanol test at 110°C, the ratio

$$D = \frac{\text{percentage of masking agent unblocking first at 110°C}}{\text{percentage of masking agent unblocking last at 110°C}}$$

is greater than 4/3, advantageously greater than 1.5 and preferably greater than 2.

12. Modified isocyanates according to claim 11, characterized in that the masking groups are, respectively, an oxime and triazole (1,2,3-triazole or 1,2,4-triazole), the oxime advantageously being methyl ethyl ketoxime, methyl amyl ketoxime, methyl pyruvate oxime or ethyl pyruvate oxime.

13. Modified isocyanates according to any one of the preceding claims, characterized in that they are selected from:

- diisocyanates;
- isocyanate compounds, in particular polyisocyanates comprising an isocyanurate group, which are also known as trimers;
- isocyanate derivatives, in particular polyisocyanates comprising at least one uretidinedione group, which are also known as dimers;
- isocyanate derivatives, in particular polyisocyanates comprising at least one biuret group;
- isocyanate derivatives, in particular polyisocyanates comprising at least one carbamate group;

- isocyanate d rivatives, in particular polyisocyanates comprising at least one allophanate group;

- isocyanate derivatives, in particular polyisocyanates comprising at least one ester group;

- isocyanate derivatives, in particular polyisocyanates comprising at least one amide group;

- isocyanate derivatives, in particular polyisocyanates comprising at least one urea function;

- isocyanate derivatives, in particular polyisocyanates comprising at least one iminocyclooxadiazinedione function;

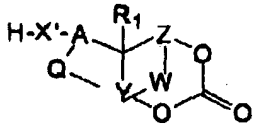
- isocyanate derivatives, in particular polyisocyanates comprising at least one cyclooxadiazinetrione function;

- isocyanate derivatives, in particular polyisocyanates comprising at least one masked isocyanate group;

- isocyanate derivatives, in particular polyisocyanates comprising a combination of one or more of the groups which have just been mentioned, in particular an isocyanurate group.

14. Modified isocyanates according to any one of the preceding claims, characterized in that they are obtained from hexamethylene diisocyanate.

15. Modified isocyanates according to claim 1, characterized in that they consist of derivatives comprising at least some isocyanate functions, preferably at least 100% to 1% and advantageously 100% to 30% by weight, modified with a compound of general formula II:



(II)

in which R_1, A, Q, Y, Z and W have the same specifications as above, and X' represents X or X-COO-.

X being as specified above with an isocyanate, and at least 1%, advantageously at least 5% and preferably at least 10%, and up to 99% and advantageously up to 70% by weight, of isocyanate functions masked with at least one masking group as defined in one of claims 9 to 12, and from 0 to 99% and preferably from 0 to 70% by weight of free isocyanate functions.

16. Modified isocyanates according to any one of the preceding claims, characterized in that they consist of diisocyanate derivatives comprising at least some of the isocyanate functions, preferably at least 100% to 1% and advantageously 100% to 30%, by weight, modified with a crosslinking group of formula II as defined in claim 15, and at least 1%, advantageously at least 5% and preferably at least 10%, and up to 99%, advantageously up to 70% by weight, of isocyanate functions modified with at least one masking group.

17. Modified isocyanates according to any one of the preceding claims, characterized in that they consist of mixtures of polyfunctional isocyanate tricondensates, which are preferably true isocyanates (derived from the theoretical (cyclo)trimerization of three isocyanate monomer molecules and optionally other monomers and comprising an isocyanurate and/or biuret ring) and of allophanates, and/or dimers comprising at least some, preferably at least 1% to 100% and advantageously 30% to 100% by weight of the isocyanate functions modified with a crosslinking group as defined in claim 15.

18. Modified isocyanates according to any one of the preceding claims, characterized in that they consist of physical mixtures of several polyfunctional isocyanate tricondensates, with allophanates, uretinediones or dimers, said isocyanates comprising from 100% to 1% and advantageously from 70% to 1% by weight of isocyanate groups modified with a crosslinking group as defined in claim 15 and from 1% to 99% and advantageously from 5% to 70% by weight of isocyanate functions masked with a masking group.

19. Modified isocyanates according to any one of the preceding claims, characterized in that they consist of isocyanates modified with a compound of general formula II according to claim 15 and comprise free isocyanate groups and/or masked isocyanate groups and also allophanate and/or uretinedione groups.

20. Process for preparing a modified isocyanate according to any one of the preceding claims, comprising the following steps:

a) reaction of an isocyanate, which is optionally a polyisocyanate and/or which comprises a group selected from carbamate, urea, biuret, uretidione, isocyanurate, urethane and allophanate groups, with a compound of general formula II according to claim 15; and

b) isolation of the product obtained.

21. Process for preparing a modified isocyanate according to any one of claims 1 to 19, comprising masked isocyanate functions, comprising the following steps:

either, in any order:

a_1) reaction of an isocyanate, which is optionally a polyisocyanate and/or which comprises a group selected from carbamate, urea, biuret, uretidione, isocyanate, urethane and allophanate groups, with a compound of general formula II according to claim 12; and

b) simultaneous or successive reaction with at least one masking compound;

or

a_2) simultaneous reaction of an isocyanate with a compound of general formula II according to claim 12 and at least one masking compound; and

b) isolation of the product obtained.

22. Use of the compounds according to any one of claims 1 to 19 for the preparation of nonexpanded thin coatings, in particular paints or varnishes.